

REMARKS

Notably, applicants were allowed an extremely shortened time period to response to this Non-Final Office Action. Usually, applicants are provided three-months to respond to an Office Action thereby eliminating the need for an extension fee until the third month has expired. However, the Office Action of September 8, 2005 informed applicants that the period to respond was shortened to only 30 days, and as such, extension fees would start to accrue from October 8, 2005. This shortened time period seems draconian to applicants and in light of the fact that applicants are a large entity the amount of the extension fees would be cost prohibitive by the third month. Applicants request an explanation for this shortened period.

Rejections of Claims and Traversal Thereof

In the September 8, 2005 Office Action,

Claims 1-23 were rejected under 35 U.S.C. §103 as being unpatentable over Eckles, et al. (U.S. Patent No.: 4,326,940 hereinafter Eckles '940).

This rejection is hereby traversed, and reconsideration of the patentability of amended claims herein is requested, in light of the ensuing remarks.

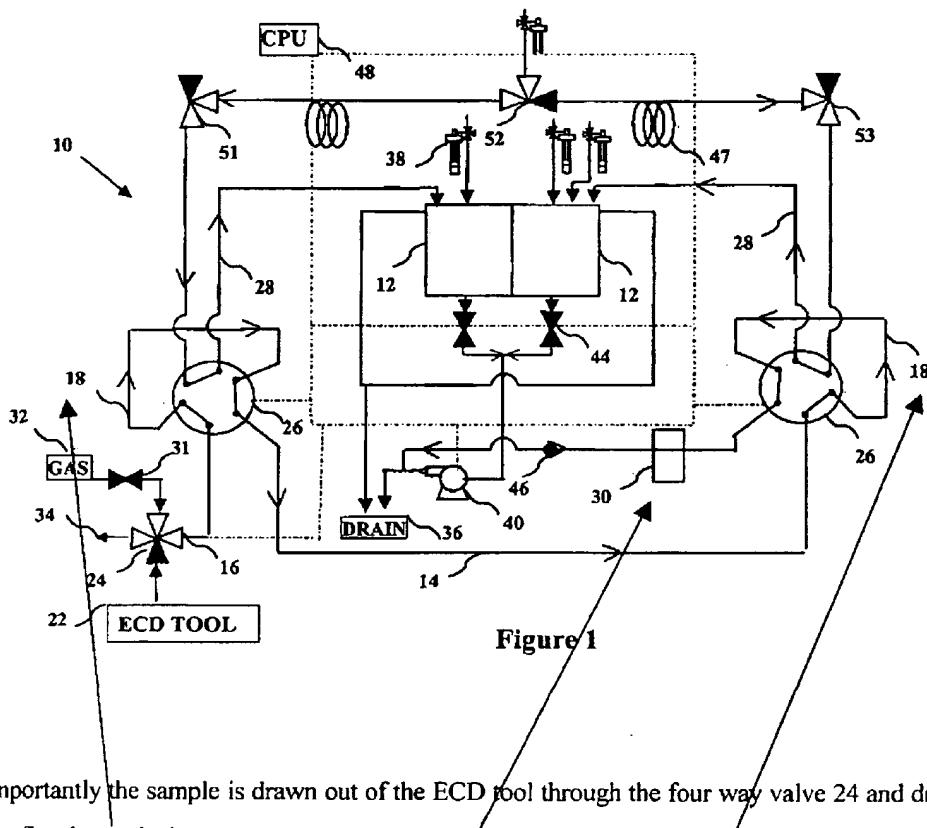
Rejection under 35 U.S.C. §103(a)

Claims 1-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Eckles, et al. Applicants submit that this reference does not meet the required standard to render the presently claimed invention as *prima facie* obvious.

The presently claimed invention relates to a sampling system that provides multiple advantages over the system describe in Eckles '940. For example, applicants' system, shown in Figure 1, provides a system having two separate analysis chambers and flow systems for simultaneous analysis of two samples withdrawn from the electroplating process tool at the same time. The two samples can be tested for different components, with different reagents, thereby reducing the time required for testing of the plating bath sample. Further, analysis, in the analysis chambers can be

occurring at the same time the sample duct and emptied sample loops are being purged of any remnants of the previous sample. Still further, two samples can be withdrawn from the electroplating processing bath at exactly the same time and retained within the flow system and then be analyzed one after the other, thereby providing for verification of the testing results of the first sample. Yet another advantage provides for the ability to withdraw a known amount of sample from the processing electroplating bath by measuring the flow through the sample duct and the amount of fluid passing thereby.

One embodiment of the present invention provides for a system as shown in Figure 1, recreated below for ease of discussion.

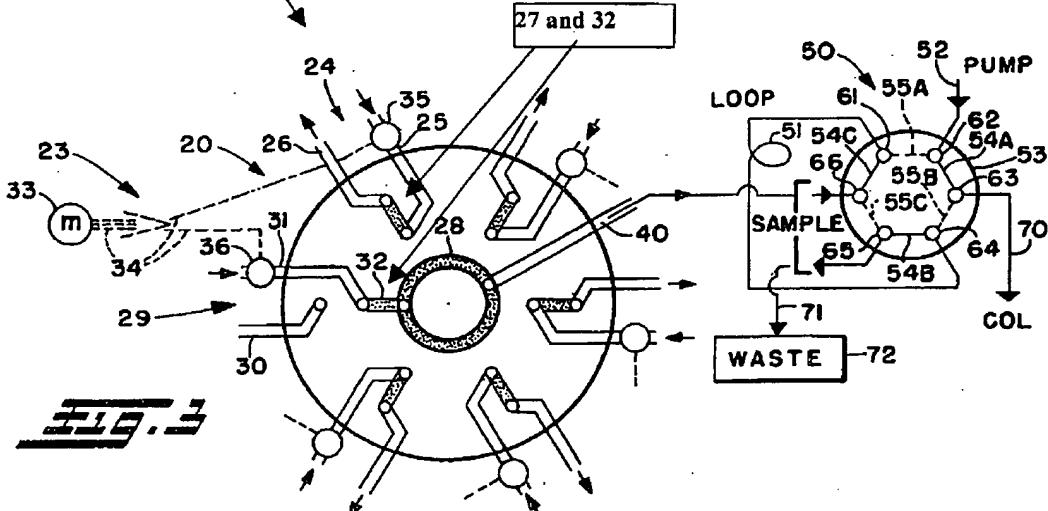


Importantly the sample is drawn out of the ECD tool through the four way valve 24 and drawn through the first loop 18, through sample duct 14 and then through the second loop 18. The amount of sample through the system is monitored by flow sensor 30 when the desired sample is retained in the system. Notably this flow sensor is placed after the two sampling loops. Then the actuatable multi-port valves 26 change position as shown in Figure 4 and the controlled amount of sample in loops 18 is introduced into the analysis chambers 12. The samples in the two loops were extracted at the same time and both

can be analyzed for different components simultaneously. Necessary reagents for such sampling can be added from reagent vessels 38.

Once the samples are taken into lines 28 the actuatable multi port valves are changed back into the position as shown in Figure 3. Thus, the entire system can be completely purged with a purging gas introduce through four way valve 24.

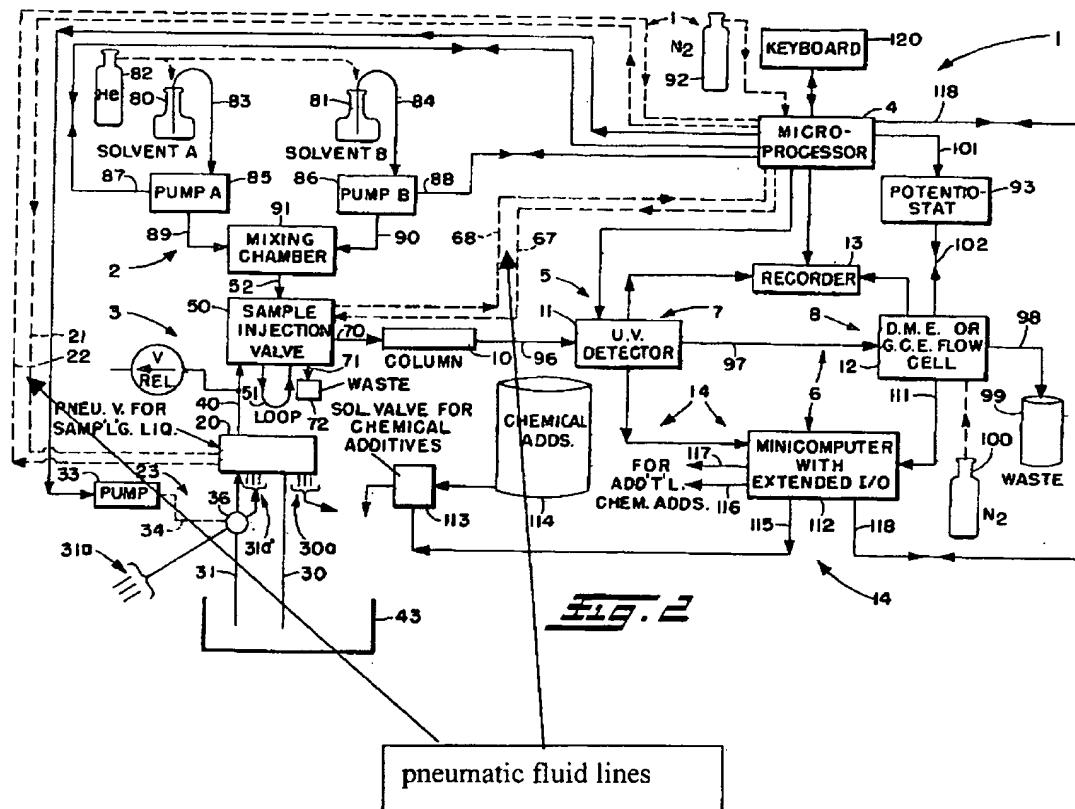
In contrast, Eckles '940 teaches a system having a valve 20 that includes six flow channels such as channel 24, which has an inlet flow 25, an outlet flow path 26 and a flow path completing mechanism or valving mechanism 27. The valving mechanism is controlled by pneumatic signals from the microprocessor 4 to complete or to interrupt the fluid connection between path 25 and 26 and connect with flow path 28 as described in column 5, lines 15-25. This text section further states that all the valving mechanism such as 27 and 32 are flow selectors of valve 20. Importantly, this section states that that all inlet paths such as 25 and 31 are connected directly to a respective electroplating bath and each outlet path such as 26 and 30 are connected back to an electroplating bath (column 5, lines 30-40). The valve switches in valve 20 operates in response to pneumatic lines 21 and 22, shown in Figure 1 of Eckles on the next page, that are coupled to microprocessor 4. (see column 4, lines 63 and



64).

The Eckles '940 reference further states, at column 8, lines 2-22, that the microprocessor 4 activates several systems, including valve 20 by controlling the delivery of pneumatic fluid, such as inert nitrogen

92, through pneumatic lines 21-22, and also activates valve 50 by controlling pneumatic fluid to lines 67 and 68, as shown below in Figure 1.



Clearly, the reference is completely devoid of any teaching or suggestion of introducing a purging fluid into valve 20 or 50 for flushing or purging the system.

According to the Office:

"Eckles provides a microprocessor controller 4 that controls sample flow throughout the system (col. 7, lines 36-66) that include controlling the 4 way valve and the multiport for injection of sample, directing the sample to a waste line, purging the sample lines by a purge gas, and further directing the purge gas to a waste line. A purging gas source 92 of nitrogen is provided in communication with the four-way valve 20 (col. 8, lines 8-12), also inert gas 100 (nitrogen) is connected to the electrochemical detector 12 for purging or reference signal generation (col. 10, lines 8-11). A waste line in fluid communication with the four-way valve is provided (col. 5, lines 38-41; col. 7, lines 10-15)."

Applicants vigorously disagree. Initially, it should be noted that Eckles '940 does not provide a purging gas to a four-way valve for introducing into the sampling system. Instead as stated above, the pneumatic fluid, such as nitrogen, is used in the valve 20 to activate the switches. Activating switches, does not include introduction and transference of a purging gas through the valve conduits. Clearly, pneumatic fluid must be retained separately for activation of the switches and certainly not provide an access line into valve 20. The cited reference does provide for a purging gas to be introduced at the very end of the sample system, that being at the electrochemical cell 12, but there is no description, teaching or suggestion of providing a system for a complete purging. Further, there is no disclosure, teaching or suggestion that valve 20 has a direct inlet for a purging fluid or a direct outlet for waste. Clearly, the cited reference states that all of the inlets and outlets of valve 20 are connected to different electroplating baths.

It is incumbent on the Office to provide some suggestion or teaching in the prior art that would lead one skilled in the art to proceed in the direction of applicants' claimed invention. The Office in this case has not provided any objective or specific teachings or suggestions in the cited prior art to motivate one skilled in the art to modify the Eckles '940 system. What is the basis of motivation to connect valve 20 to a waste outlet or for introducing a purging gas? Clearly, there is none in this reference. The Courts have addressed the general criterion of this issue numerous times, and have stated that "[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Mills*, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). Eckles '940 does not suggest the desirability of two sample loops or the isolation of the these sample loops for introducing a sample to the analysis tanks while still having the option for simultaneous analysis and refilling or purging of the remainder of the system. Thus, the Office seems to be merely reinterpreting the prior art in light of the applicants' disclosure, in order to reconstruct the applicants' claimed invention, but without any instructional or motivating basis in the reference itself. Such approach is improper and legally insufficient to establish any *prima facie* case of obviousness.

Further, the Office has failed to give any probative weight to the advantages and benefits of the present invention as part of the "invention as a whole" and instead has cited a reference that **does not in any way** disclose or teach such advantages. Eckles '940 provides no information on the advantages of having two sample loops so that two samples can be withdrawn at the approximately the same moment of processing time and having the ability to test the samples for different

components simultaneously or a second sample can be tested subsequently for verification of the test results of the first sample.

Still further, Eckles '940 does not teach or suggest the inclusion of a flow sensor with the proper placement after the sample loops to insure that the samples loops contained the controlled amount of sample for testing. If such a flow sensor was included in the Eckles '940 system it would not, one skilled in the art would have to deal with the pressure differences between flow through valve 20 and the increase pressure that is required for forcing the sample through the HPLC. Thus there is no teaching or suggestion for introducing a flow sensor and the Office is not allowed to speculate on the placement of same. The cited reference must provide the teaching and suggestion for not only the inclusion of a flow sensor but the placement. As such, this Eckles '940 disclosure does not in any way describe, imply or extrapolate to applicants' claimed invention.

For these reasons, the Office has not met its burden of establishing a *prima facie* case of obviousness. The applicants therefore request that the rejection of claims 1-23 on the basis of obviousness be withdrawn.

Rejoinder of Withdrawn Claim 24

Applicants have amended claim 24 so that it recites all of the elements of claim 1 and request that this claim be taken up for examination when the products claims are found patentable.

CONCLUSION

Applicants have satisfied the requirements for patentability. All pending claims are free of the art and fully comply with the requirements of 35 U.S.C. §102 and §103. It therefore is requested that Examiner Siefke reconsider the patentability of claims 1-24 in light of the distinguishing remarks herein, and withdraw all rejections, thereby placing the application in condition for allowance. Notice of the same is earnestly solicited. In the event that any issues remain, Examiner Siefke is requested to contact the undersigned attorney at (919) 419-9350 to resolve same.

Respectfully submitted,



Marianne Fuierer
Reg. No. 39,983
Attorney for Applicants

**INTELLECTUAL PROPERTY/
TECHNOLOGY LAW**
Phone: (919) 419-9350
Fax: (919) 419-9354
Attorney File No.: ATMI-579